

2014 1987

WILLMET, INC.

Johnson #1-6

NE NW SW, Sec. 6, T16N R8W

Chippewa Twp., Macosta Co.

SAMPLE DESCRIPTION

0 - 638	Drift
	<u>Michigan Group @ 638 Sch</u>
638 - 700	Shale, red, soft, calcareous with gypsum.
700 - 900	Sandstone, transparent to white, to red, medium grained, subround, fairly well sorted, becoming well cemented to base.
900 - 1180	Shale, gray to black, finely crystalline, firm, tight, trace pyrite, non-calcareous.
1180 - 1260	Shale, black to brown, firm with sandstone white, translucent, very finely grained, subround, calcareous cement.
1260 - 1465	Shale, black, blue gray, firm, calcareous, highly organic, trace anhydrite.
	<u>Triple Gyp @ 1465 Sch</u>
1465 - 1537	Anhydrite, white, firm with shale, black, firm.
	<u>Brown Lime @ 1537 Sch</u>
1537 - 1652	Dolomite, brown to dark brown, very finely crystalline, compact, trace intercrystalline porosity, trace anhydrite.
	<u>Stray Sand @ 1652 Sch</u>
1652 - 1762	Sandstone, white, translucent, subangular, calcareous cement, well cemented, with shale dark gray.
	<u>Marshall @ 1762 Sch</u>
1762 - 1920	Sandstone, red very fine grained, subround, calcareous cement, well cemented, shale, blue gray, firm, red stain, slightly calcareous.
	<u>Coldwater @ 1920 Sch</u>
1920 - 2678	Shale, dark gray, gray, firm, calcareous.
	<u>Sunbury @ 2678 Sch</u>
2678 - 2780	Shale, black, gray, firm, calcareous, highly organic.

WILLMET, INC.
Johnson #1-6
NE NW SW, Sec. 6, T16N R8W
Chippewa Twp., Mecosta Co.

Page 2.

Ellsworth @ 2780 Sch

2780 - 3170 Shale, black, blue gray, firm, trace pyrite, slightly calcareous.

Antrim @ 3170 Sch

3170 - 3332 Shale, black, dark brown, very organic, non-calcareous, firm.

Traverse Formation @ 3332 Sch

3332 - 3392 Shale, light gray, brown, becoming very calcareous, becoming more limy.

Traverse Limestone @ 3392 Sch

3392 - 3580 Limestone, white to buff, very fine to finely crystalline, trace intercrystalline porosity, no fluorescence or stain.

3580 - 3913 Limestone, white, mottled, dark brown, very finely crystalline, trace stain, trace fluorescence, poor intercrystalline porosity.

Bell Shale @ 3913 Sch

3913 - 3971 Shale, dark gray, gray, blue gray, firm, non-calcareous.

Dundee @ 3971 Sch

3971 - 4041 Limestone, brown, white, mottled, very finely crystalline, moderately argillaceous.

Reed City Anhydrite @ 4041 Sch

4041 - 4058 Anhydrite, white.

Reed City Dolomite @ 4058 Sch

4058 - 4200 Limestone, tan to buff to dark brown, very fine to finely crystalline, argillaceous in part, trace stain and fluorescence, intercrystalline porosity.

Detroit River Anhydrite @ 4200 Sch

4200 - 4263 Anhydrite, white, firm.

Detroit River Salt @ 4263 Sch

4263 - 4643 Salt (none in samps), with anhydrite and dolomite, brown to tan, very finely crystalline, compact, trace stain, no fluorescence.

WILLMET, INC.
Johnson #1-6
NE NW SW, Sec. 6, T16N R8W
Chippewa Twp., Mecosta Co.

Page 3.

Base Detroit River Salt @ 4643 Sch

4643 - 4804 Anhydrite, white to light gray with dolomite, tan, very finely crystalline, fair intercrystalline porosity, slightly argillaceous, no fluorescence.

Massive Anhydrite @ 4804 Sch

LUCAS Fm

4804 - 4866 Anhydrite, white, firm.

Richfield @ 4866 Sch

LUCAS Fm

4866 - 5052 Anhydrite, white, firm, with dolomite, brown-tan-buff, very finely crystalline, compact, tight, trace stain and fluorescence.

Base Richfield Anhydrite @ 5052 Sch

LUCAS Fm

5052 - 5130 Dolomite, gray, black, trace white, very finely crystalline, tight, trace stain and fluorescence, no cut.

Black Limestone @ 5130 Sch

AMHERSTBURG Fm

5130 - 5225 Dolomite, black, dark gray, finely microcrystalline, trace intercrystalline porosity, argillaceous, wackstone, trace DDO and fluorescence, no cut.

Sylvania @ 5225 Sch

5225 - 5342 Sandstone, white, gray, very fine grained, well cemented, sub round, calcareous cement.

Bois Blanc @ 5342 Sch

5342 - 5512 Limestone, dark gray-gray, microcrystalline, good porosity in part, with dolomite, dark gray-gray, microcrystalline, trace chert.

Bass Island @ 5512 Sch

5512 - 5797 Dolomite, brown-gray, becoming black, very finely crystalline, 37% intercrystalline porosity, not stain or fluorescence.

Salina @ 5797 Sch

5797 - 5806 Dolomite, black, dark brown, very finely crystalline, compact, argillaceous.

F Unit @ 5806 Sch

5806 - 5848 Dolomite dark brown, gray, very finely crystalline compact, argillaceous.

WILLMET, INC.
Johnson #1-6
NE NW SW, Sec. 6, T16N R8W
Chippewa Twp., Macosta Co.

Page 4.

F Salt @ 5848 Sch

5848 - 6403 Salt, with shale, gray, soft.

E Unit @ 6403 Sch

6403 - 6538 Dolomite, brown, very finely crystalline, trace intercrystalline, porosity, compact, moderately argillaceous, with shale, gray, soft.

D Salt @ 6538 Sch

6538 - 6582 Salt.

C Shale @ 6582 Sch

6582 - 6674 Shale, siltstone, red, gray, firm, dolic.

B Salt @ 6674 Sch

6674 - 7047 Salt, massive, trace shale, gray, soft.

A2 Carbonate @ 7047 Sch

7047 - 7183 Limestone, brown-dark brown, very fine to finely crystalline, trace intercrystalline porosity, no stain or fluorescence.

A2 Evaporite @ 7183 Sch

7183 - 7551 Salt, massive.

A1 Carbonate @ 7551 Sch

7551 - 7606 Dolomite, black, white, gray, fine to microcrystalline, argillaceous, wackstone.

A1 Evaporite @ 7606 Sch

7606 - 7952 Salt, massive.

Niagaran @ 7952 Sch

7952 - 8076 Limestone, light gray, white, very finely crystalline.

Clinton (Manistique) @ 8076 Sch

8076 - 8140 Limestone, light gray, white finely crystalline, trace intercrystalline porosity, compact, wackstone, trace chert.

WILLMET, INC.
Johnson #1-6
NE NW SW, Sec. 6, T16N R8W
Chippewa Twp., Mecosta Co.

Page 5.

Burnt Bluff @ 8140 Sch

Cored - See Description

Cabot Head @ 8205 Sch

8205 - 8284 Shale, gray-dark gray, firm, very calcareous.

Manitoulin @ 8284 Sch

8284 - 8312 Limestone, dark gray-gray brown, white, clear, sucrosic,
no stain, trace fluorescence.

Cincinnati @ 8312 Sch

8312 - 8390 Shale, deep red, iron stained, firm, with dolomite, blue
gray, very finely crystalline.

WILLMET, INC.
Johnson #1-6
NE NW SW, Sec. 6, T16N R8W
Chippewa Twp., Mecosta Co.

Page 6.

CORE #5

8104 - 8163

Cut 59' - Rec. 50.6'

- 8104 - 08.5 Limestone, dark gray to medium gray with wispy bands, argillaceous material, micro-cryptocrystalline, dense, very tight, very compact.
- 8108.5 - 35 Limestone, gray to dark gray, slight intergranular porosity, having slightly punky look on outside.
- 8135 - 44 Limestone, gray, dark gray, cryptocrystalline, dense.
- 8144 - 56.4 Limestone, gray, dark gray to black gray, microcrystalline, occasional crystals visible, very distinct mottled appearance, interbedded with mudstone with shale and crystalline limestone.
- 8156.4 - 63 Limestone, as above, with 10 vugs 2" or larger, vugs filled with dolomite rhombs 1/16 to 1/8", also filled with dolomite mud, matrix is limestone, compact, microcrystalline to cryptocrystalline.

CORE #6

8163 - 8205

Cut 30' - Rec 30.4

- 8163 - 75 Limestone, dark gray, fine crystalline, sucrosic, tight, dense, convoluted bedding in a matrix of light gray limestone, very fine crystalline to microcrystalline, soft sediment deformation over entire interval 64.8, 71.7, and 72.2, calcareous crystals, slightly dolic, very distinct rhombs in a clay mixture, 3 distinct bands, trace fossil hash at 72'.
- 8175 - 75.6 Limestone, white, gray, fine crystalline, containing fossil and porosity filled with clay.
- 8175.6 - 8205 Limestone, dark gray, fine crystalline with slightly sooty appearance (40%), mottled with limestone, light gray, very fine crystalline (60%), compact, mudstone, light portion contains dark blobs which washed out on exterior of core, heavily mottled, partly with burrows and rest soft sediment deformation, occasional mud crack.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
LOG OF OIL, GAS, DISPOSAL OR STORAGE WELL (ACT 61)
Submit in DUPLICATE Within 30 Days after Well Completion

DEC 14 1982

PERMIT NUMBER 36067
DEEPENING PERMIT NUMBER

NAME(S) & ADDRESS OF OWNER(S) SHOWN ON PERMIT Willmet, Inc 2250 Enterprise Drive Mt. Pleasant, MI 48858				NAME & ADDRESS OF DRILLING CONTRACTOR(S) T. D. Provins Drilling Company 2113 Enterprise Drive Mt. Pleasant, MI 48858			
LEASE NAME(S) & WELL NUMBER SHOWN ON PERMIT Johnson #1-6						DIRECTIONALLY DRILLED YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
SURFACE LOCATION NE NW SW		SECTION 6	TOWNSHIP 16N	RANGE 8W	TOWNSHIP NAME Chippewa		
FOOTAGES (North/South) 460 Ft. from North		Line and 585		FOOTAGES (East/West) Ft. from West		Line of quarter section COUNTY NAME Mecosta	
SUBSURFACE LOCATION		SECTION	TOWNSHIP	RANGE	TOWNSHIP NAME		
FOOTAGES (North/South) Ft. from		Line and		FOOTAGES (East/West) Ft. from		Line of quarter section COUNTY NAME	
DATE	DRILLING BEGUN 9-23-82		TOTAL DEPTH OF WELL Driller 8386 Log 8390		TYPE WELL Dry Hole		ELEVATIONS
	DRILLING COMPLETED 10-29-82		FORMATION AT T.D. Cincinnatian		FT. DRLD. - ROTARY TOOLS From 0 To 8390		K.B. 1191.5 R.F.
	WELL COMPLETED		PRODUCING FORMATION(S)		FT. DRLD. - CABLE TOOLS From To		R.T. Grd. 1175

CASING, CASING LINERS AND CEMENTING

PERFORATIONS

SIZE	WHERE SET	CEMENT	Ft. Pulled	DATE	NUMBER HOLES	INTERVAL PERFORATED	OPEN	
24"	60	0	---				YES	NO
13 3/8	904	904	---					
9 5/8	5550	250 Sx				NONE		

GROSS PAY INTERVALS

ALL OTHER OIL AND GAS SHOWS OBSERVED OR LOGGED

FORMATION	OIL OR GAS	FROM	TO	FORMATION	OIL OR GAS	DEPTH	WHERE OBSERVED (X)					
							Samples	Odor	Pits	Mud Line	Gas Log.	Fill Up
				Antrim	Gas	3200					X	
NONE				Sour Zone	Gas	4676					X	
				Burnt Bluff	Gas	8160					X	

STIMULATION BY ACID OR FRACTURING

WATER FILL UP (F.U.) OR LOST CIRCULATION (L.C.) (X)

DATE	Interval Treated	Materials and amount used	FORMATION	F.U.	L.C.	DEPTH	AMOUNT
	NONE		NONE				

MECHANICAL LOGS, LIST EACH TYPE RUN

DEPTH CORRECTION DEVIATION SURVEY PLUGGED BACK

Brand	(X)	LOG TYPES	LOGGED INTERVALS	DEPTH	CORRECTN	RUN AT	DEGREES	YES	NO	DEPTH
Schlumberger	X	LDT-CNL-GR	200-8390			3586	1 1/2°			
Birdwell		Sonic	200-8290			6761	1 1/2°			
		DLL-MLL	3300-8390			8098	3°			

PRODUCTION TEST DATA

OIL - Bbls/day	GRAVITY - °API	COND. Bbls/day	GAS - MCF/day	WATER - Bbls/day	H ₂ S - Grains/100 cu. ft.	B.H.P. AND DEPTH

I AM RESPONSIBLE FOR THIS REPORT. THE INFORMATION IS COMPLETE AND CORRECT.

DATE 12/6/82	NAME AND TITLE (PRINT) William E. Booker, Geologist	SIGNATURE <i>William E. Booker</i>
-----------------	--	---------------------------------------

NOTICE REPORT COMPLETE SAMPLE AND FORMATION RECORD AND DRILL STEM TEST INFORMATION ON REVERSE SIDE

R - 7210
Rev. 2/77